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AUTHOR van Dongen, Dre
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ABSTRACT

In the Netherlands, explicit beginning reading instruction usually starts in grade one. The children learn grapheme-phoneme correspondences, blending, and phonemic analysis. However, some children experience difficulties in beginning reading that the existing educational procedures are not adequate to resolve. One possible solution being implemented is the Prevention of Reading Difficulties Project, which precludes reading difficulties by predicting the at-risk children, assessing their expected difficulties, and teaching reading in such a way that reading difficulties do not occur. To provide some scientific basis for the project, three separate studies will be conducted: (1) a longitudinal study consisting of description of the development of reading ability in grades one to three, with special attention to at-risk children; (2) an explorative study providing a detailed description of the development of relevant aspects of the reading process in grade one by comparing at-risk children with other children; and (3) a study that will categorize the various tasks that constitute reading, relate distinct tasks to the results of the first two studies, and evaluate ways in which this strategy and the tasks can be used in ordinary schools. Thus far, four reading readiness tests have been identified to predict at-risk children--visual-letter perception, blending, phonetic analysis, and auditory discrimination. The assessment and the actual prevention of reading disabilities will be the next steps of the project. (HOD)

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Dré van Dongen[1]
Insitute for Educational Sciences
University of Nijmegen

The project 'Prevention of reading difficulties'[2]

Strategy for preventing reading difficulties in grade one and discussion of one aspect of it, viz. predicting who are the at-risk children.

Paper presented at the Second European Conference on Reading, Joensuu, Finland, August 3, 1981

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The ability to listen and speak is largely developed in an implicit way, and the influence of education on it consists to a large extent of the stimulation and motivation of our children in order to enable them to develop a more elaborate and sophisticated use of oral communication. The same can be said about written language, although certain aspects of this communication system have to be taught explicitly: spelling rules, some abilities which are important with respect to beginning reading (e.g. the ability to analyse a word phonetically: /ball/ → /b/ /a/ /l/ and the correspondence between graphemes and phonemes and v.v.: 'p' ↔ /p/), and so on. Some children master these abilities without formal instruction, but most of them need some kind of explicit teaching (at least in the Netherlands).

In Dutch infant schools, much attention is paid to the development of various aspects of oral language. This is sometimes systematically done. There is even considerable variation in the ways reading readiness skills are thought and indeed in the time allotted for them. In my opinion it is possible that the concept of 'linguistic awareness' (Valtin, 1979, pp.2) adds an extra dimension to the training of these abilities: from 'just practising' reading readiness[3] skills as educational objectives in themselves towards a more cognitive, developmental approach in which all these activities serve as a variety of means to stimulate 'the ability to reflect on speech and make language an object of thinking' (Valtin, 1979, pp.2).

1. Grade one

In the Netherlands the explicit teaching in beginning reading usually starts in grade one of primary school. The children must learn - among other things - grapheme-phoneme correspondences, blending and phonemic analysis. These abilities are taught systematically: most teachers use standard programmes for it which are rather complex, practically oriented and well-thought out.

1.1. The problem in grade one

In spite of the time and effort spent by teachers it often occurs that several children drop behind after a few months in grade one.
A lot of teachers try to help these children to catch up with the rest of the class. This is done by means of remedial teaching, i.e. giving special and/or extra treatment to individuals or groups of children in order to 'cure' the reading problem. In the Netherlands a variety of remedial teaching techniques and procedures are used. They usually consist of two stages: assessment and remediation (Smead, 1977,p.113). Although quite often much time, energy and money are spent in remedial teaching the results appear to be rather disappointing (Dubbeldam,1977,p.34).

Thus the problem we have to face in the Netherlands is that some children experience difficulties in beginning reading and that the existing educational procedures are not adequate to resolve them.

1.2. A possible solution.

One reason for the disappointing results of remedial teaching in grade one might be that the existing remedial reaching techniques and procedures are not perfect. Some studies stress this point. Arter and Jenkins (1979), for example, criticize six assumptions that underly the dominant remedial teaching model, viz. differential diagnoses - prescriptive teaching.[4] And Smead (1977) offers some other shortcomings of this model:

- only distinct aspects of the child's behaviour are in focus;
- the learning task is insufficiently analysed;
- little attention is paid to the setting in which assessment and remediation have to take place;
- the teacher's characteristics or relationship with the child are neglected.

Improvement of the existing remedial teaching procedures and techniques will probably lead to better results. But it is not certain that this will be a sufficient solution for the children that drop behind

in grade one. This is so, because remedial teaching (especially in the assessment stage) takes no account of what has happened to the child since the start of grade one. For example:

- The child may have acquired some kind of incorrect reading behaviour due to inadequate teaching. Some children for example decode words improperly because they rely too much on some kind of guessing-strategy. They should have had more instruction in word-decoding skills(to stimulate linguistic awareness?) from the beginning of the schoolyear.
- When a child drops behind it is often no longer able to fulfill the demands set by the teacher to the class as a whole. As a result of this frequent failure in class, the child may acquire low motivation in learning to read.
- Weak performers at the start of the schoolyear may be stigmatized as poor readers by teachers, parents and class mates. As a result of this so-called 'Pygmalion effect' (Dunkin and Biddle, 1974, p.130) the child may become a poor reader.

Some twenty years ago Malmquist (1969) performed a project which aim was not so much to remedy reading difficulties as to prevent their occurrence, so as to avoid the problems mentioned above. According to Malmquist the project was successful (Malmquist, 1969, p.117). And his succes inspired us to initiate a similar project in the Netherlands.

So far we have been talking about Dutch infant schools and about our arguments for choosing to prevent reading difficulties in grade one instead of remediating them.
In what follows we shall describe the strategy we apply in grade one of primary school and discuss one part of it, viz. predicting reading ability. Because of the limited scope of this paper I will not go into other aspects of the 'Prevention of reading difficulties' project, such as:

- what happens in grade two to six of primary school?
- the relations between infant school, grade one, and grades two to

six;

- the organizational structure of the project;
- the relations between research, development, consultation, instruction, etc.

2. Strategy to be applied in grade one.

In order to prevent reading difficulties, a strategy is applied that consists of three stages (figure 1):

a. The first step is to predict who are the at-risk children with regard to beginning reading.

b. In the second stage the teacher assesses the expected difficulties of the at-risk children.

c. Instruction is given in such a way that the occurrence of the reading difficulties is prevented (stage three).

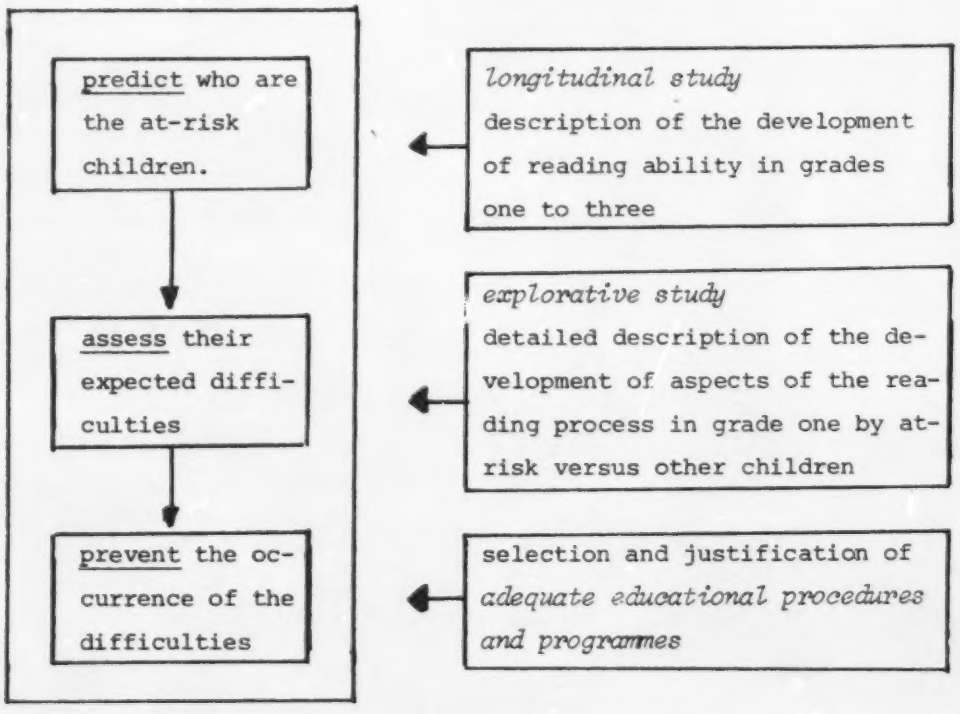

predict who are the at-risk children.
assess their expected difficulties
prevent the occurrence of the difficulties
strategy to be applied in grade one
longitudinal study
description of the development of reading ability in grades one to three
explorative study
detailed description of the development of aspects of the reading process in grade one by at-risk versus other children
selection and justification of adequate educational procedures and programmes

figure 1. Strategy to be applied in grade one and related scientific studies

This strategy must meet two requirements:

1. It must be fit for use in ordinary primary schools by ordinary teachers.
2. It must have some scientific basis.

The first requirement is fulfilled by rejecting all techniques and materials that are not suitable in practice. This is tested by means of continious experimentation in schools. Moreover, teachers and consultants are directly involved in the development of the techniques and materials.

The second requirement is met by performing seperate studies to support each stage, as is shown in figure 1:

a. The longitudinal study consists of the description of the development of reading ability in grades one to three, in which special attention is paid to the at-risk children. One result of this study will be a set of instruments to predict at-risk children, which can be used in ordinary schools. In paragraph 3 this study will be discussed in more detail.

b. In the explorative study a detailed description is made of the development of relevant aspects of the reading process in grade one by comparing at-risk children with other children. This study will result in a better understanding of the actual development of reading ability in a setting with a high ecological validity (Bracht and Glass, 1968). This means that the resemblance of the setting and instruments of this study to the real situation in (Dutch) schools is high (classroom-situation, teacher-behaviour, use of standard programmes, worksheets of pupils serve as 'tests', and so on). In this way interpretation of the results can have direct implications for assessment in grade one.

c. The third stage is supported by means of the selection and justification of adequate educational procedures and programmes. This is done:
   - by trying to categorise the large number of various tasks that constitute reading (and remedial teaching) programmes for Dutch children in a consistent framework;

- by trying to relate distinct tasks to the results of stage one (prediction) and stage two (assessment) in such a way that they are applicable by teachers;
- by evaluating the ways in which this strategy and the tasks are used in ordinary schools.

3. Predicting reading ability in grade one

3.1. The longitudinal study.

The first stage of the strategy to be applied in grade one is the prediction who are the at-risk children. One objective of the longitudinal study is the development of a set of instruments to predict these at-risk children. In a broader sense the questions under study are:

. In what way are the skills of reading and spelling and related variables developed in grades one to three in primary school?

. In what way and to what extent do children experience problems at school because their ability to read and spell is poorly developed? What are the characteristics of these children?

The theoretical model of this longitudinal study is shown in figures 2 and 3. This model is created by combining the ones used by Malmquist (1969), Dickes (1978) and Röhr (1978). The key-variables are represented in figure 2: at the beginning and near the end of grade one, two and three the following variables are systematically measured:

- decoding ability;
- reading comprehension;
- spelling;

(And just before the start of grade one reading readiness is measured). Thus, figure 2 represents the way in which reading and spelling ability are developed in grades one to three.

In figure 3 these key-variables (written in capitals) are related to variables that may have significant influence on the development of reading and spelling ability, viz.

- characteristics of the social and psychological environment of the child , such as: family structure, social-economic class (income and schooling), attitude in the family towards reading;

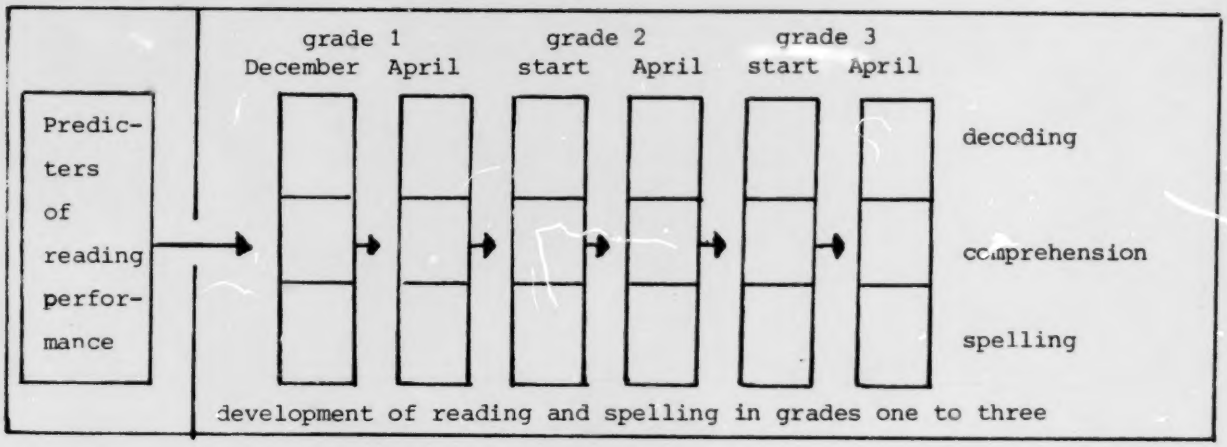


Figure 2. Representation of the way in which reading and spelling ability are measured in grades one to three.

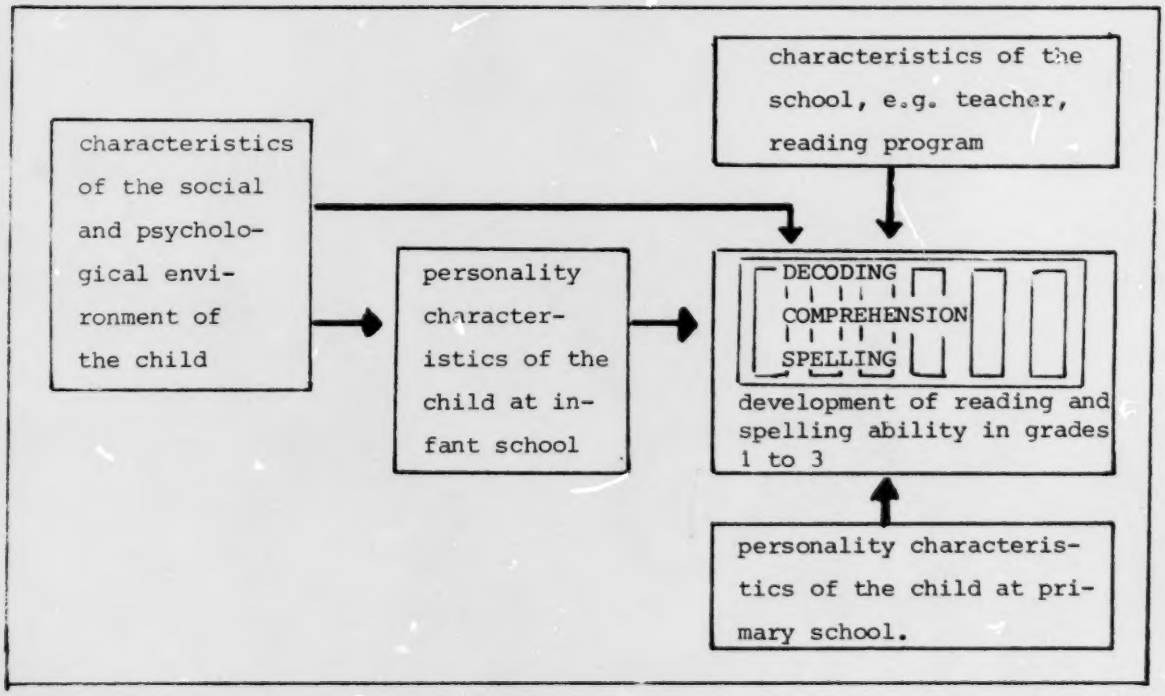

characteristics of the school, e.g. teacher, reading program
characteristics of the social and psychological environment of the child
personality characteristics of the child at infant school
DECODING
COMPREHENSION
SPELLING
development of reading and spelling ability in grades 1 to 3
personality characteristics of the child at primary school.

Figure 3. Theoretical model of the longitudinal study

- characteristics of the child at infant school, such as: reading readiness, intelligence, independence, language development;
- characteristics of the child at primary school, such as: intelligence, independence, language development, motivation, interests of the child;
- characteristics of the school, such as:
  . teacher-related variables (e.g. experience, age, sex, training),
  . class-related variables (e.g. number of children per class, class-organization, facilities),
  . programme-related variables (e.g. structure, content, explicitness).

These variables have been operationalised (see paragraph 3.2)

The data-collection of this longitudinal study started in August 1979. We had the cooperation of some 600 first grade pupils at 24 schools that are representative for all Dutch primary schools (Van Dongen, 1979).

At this moment (August 1981) the data up to the end of grade one are being analysed. I will discuss them with regard to the predictability of reading ability in grade one.

3.2. Predicting reading ability in grade one.

In figure 4 the relevant variables for the prediction of reading ability in grade one are operationalised. Each instrument will now be described briefly.

a. Questionnaire for the parents.

The parents of the children under study answered a number of questions concerning:

- family-structure,
- nationality of the child,
- profession of the father,
- schooling of the parents.
- attention paid to reading in the family,
- the child's case-history.

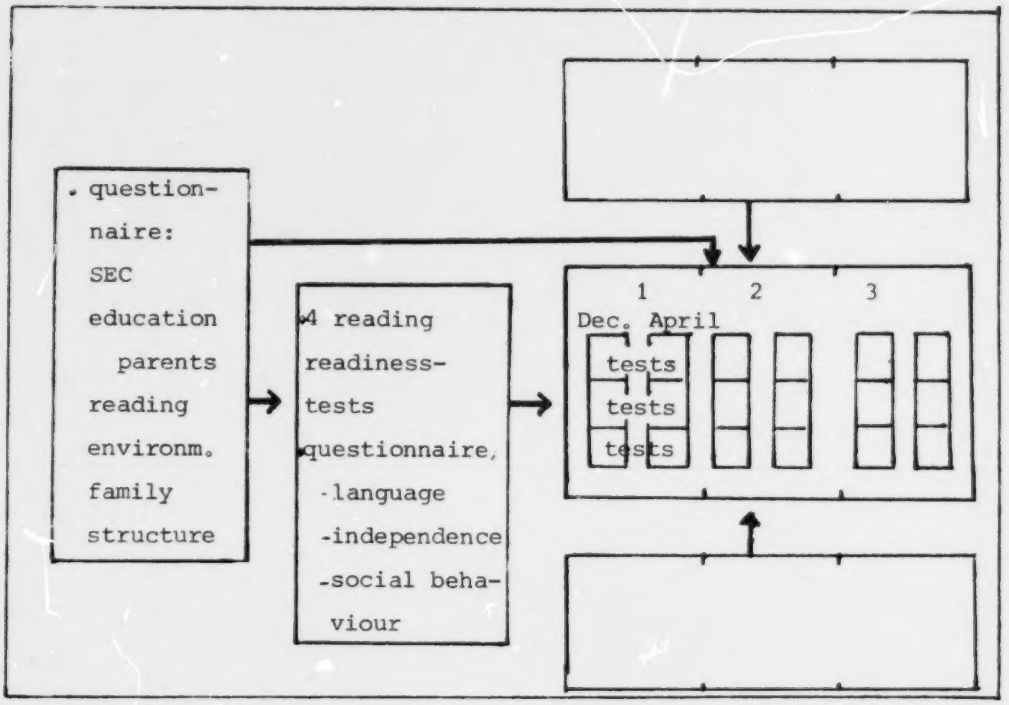


Figure 4. Relevant instruments for the prediction of reading ability in grade one.

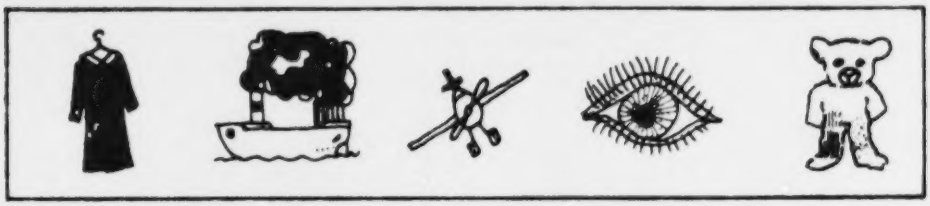
b. Questionnaire for the infant-school teacher, which consists of 44 items to be answered according to a 5-point rating scale. The questionnaire covers three variables (language developement, independence and social behaviour) and contains four specific questions about school readiness, intelligence, expected problems in grade one because of the difficulty of subject-matter, and expected problems due to the child's behaviour.

c. Intelligence-test (E.L.I.), which consists of
- a shortened version of Raven's Progressive Matrices;
- a figure copying-test (Rey-test).

d. Four reading readiness tests, which can be administered in groups.
. Visual letter-perception test, which goes as follows:
The child must put a circle around the group of letters (behind the vertical line) which is the same as the group before the bar.

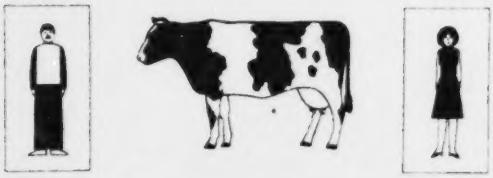
mc	nc mc nn cm

. Blending-test, in which the teacher's instruction is:
"I'll pronounce a word, but I'll split it up into peaces. You (i.e. the child) must put a circle around the picture that I say. The word is /oo/ /g/" (Dutch word for eye).



. Fonetic analysis test.
"In the little square you see 'boom' (i.e. tree). In the big square you see 'pet, bed, wiel' (i.e. cap, bed, wheel). Put a circle around 'boom'. And put a circle around the picture in the big square that starts with the same sound as 'boom'.

. Auditory discrimination test.
The instruction is on tape. The voice of a man says /koe/, the voice of a woman says /moe/ ('cow' and 'mother'). The child has to put a circle round the person who described the picture correctly.



In December and in April several tests were administered to measure the following criterion variables: decoding, reading comprehension, and spelling ability.

The reliability of almost all the tests was satisfactory (> .80).
About the correlations between predictors and the criterion instruments the following can be said:

- the correlations between the instruments to measure variables of the social and psychological environment and the instruments to measure reading ability (criterion instruments) never exceed .33. This implies, that the explained variance is less than 10% (r^2);
- the correlations between the characteristics of the child in infant school (measured with the questionnaire for the infant school teacher) and reading ability sometimes reach values of over .50 and suggest explained variances of more than 25% (r^2);
- the correlations between the four reading readiness tests and reading ability also reach .50;
- the multiple correlation (R) between the combination of all predictor-variables and each criterion instrument lies between .62 and .75, which is rather high.

But what does a correlation of .75 mean? How well can one predict at-risk children by means of these instruments? One way to visualize this is mentioned below. We will just consider the four reading readiness tests (visual letter perception, blending, fonetic analysis and auditory discrimination) and reading ability in December.
The predictability of reading performance is shown in figure 5.

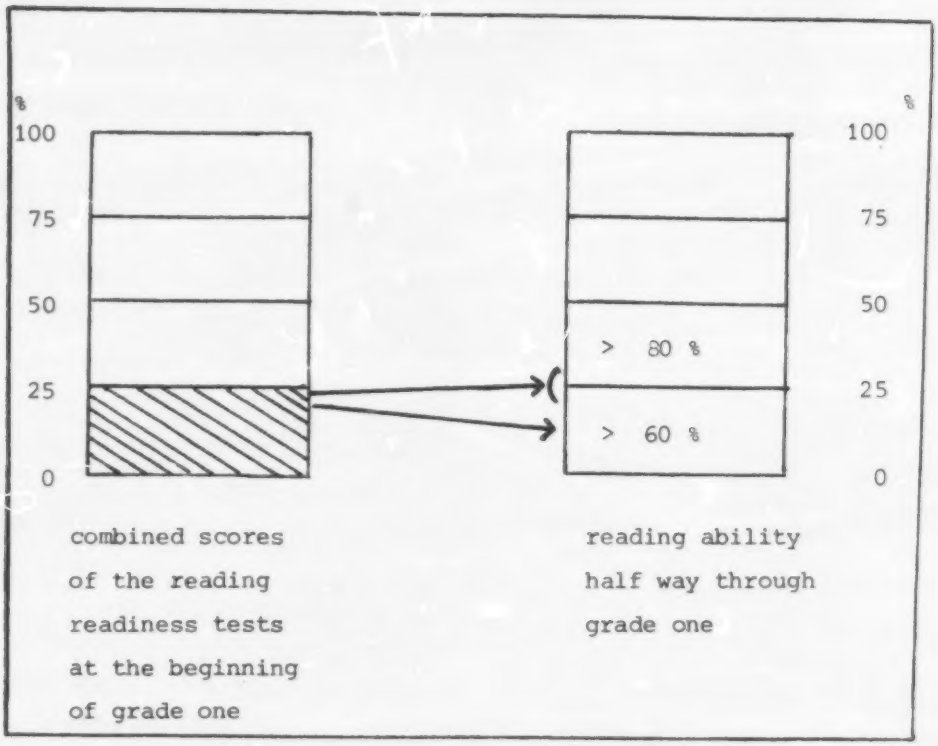


Figure 5. Predictability of reading performance half-way through grade one by the reading readiness tests.

On the left side the pupils have been rank-ordered according to their reading readiness at the beginning of the schoolyear: the highest performer at the top and the weakest at the bottom. If prediction had been perfect, then the weakest performer in reading readiness, would have the weakest reading ability in December, and so on:
the order on the left side of figure 5 would be identical to the one on the right (in which the children are ranked according to their reading ability in December.
But unfortunately, our prediction is not perfect. So we have calculated how many weak performers in reading readiness actually achieved low in December: of the lowest quarter (achievement in reading readiness) about 60% of the children belong to the lowest quarter of the class-group in reading performance. And of the lowest quarter (in reading readiness) about 80% of the pupils belong to the lowest half in reading ability.

Thus,if we want to know who are the at-risk children in a class, these four reading readiness tests (which are easily administered) will provide useful information.

The assessment of these at-risk children (stage 2) and the actual prevention of the occurrence of reading disabilities (stage 3) are the next steps to be taken. And they too are considered in the 'Prevention of reading difficulties' project. I hope to discuss them some other time.

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Notes:

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[2] The study reported herein is supported by the Dutch Foundation for the Study of Education (S.V.O.-project 0492) and the Ministry of Education and Sciences.

[3] The concept 'reading readiness' is defined in several ways. Paul Dickes (1978), for examole, who studied over 500 publications on reading readiness distinguishes:

a. descriptive definitions, in which the term is used to identify those characteristics in the child which apparently (because of their predictive validity) enable him to profit from reading instruction (p. 6);

b. explicative definitions, in which environmental causes (or combinations of them) are stressed.

In the Netherlands 'reading readiness skills' are usually refered to as consisting of perceptual and/or auditory skills that seem to be of some importance for beginning reading.

[4] Differential diagnosis-prescriptive teaching involves the assessment of psycholinguistic and perceptual motor abilities that are presumed necessary for learning basic academic skills. Based on the differential pattern of ability strengths and weaknesses resulting from this assessment, individual remedial prescriptions are prescribed (Arter and Jenkins, 1979, p. 517).